Proactive planning

Landowners and agricultural producers in the Cedar Creek watershed are working with agency representatives and government leaders on a proactive plan to help reduce pollution flowing into Cedar Creek Reservoir.

The 34,000-acre reservoir, southeast of Dallas, is the first of five reservoirs managed by the Tarrant Regional Water District (TRWD) that is being studied through the North Central Texas Water Quality project.

Stakeholders in the reservoir's four-county watershed have an opportunity to voice their opinions and help draft the watershed protection plan for the reservoir. The plan, which will outline ways to reduce pollution and improve water quality, is an outgrowth of years of water quality monitoring and research by TRWD, The Texas A&M University System, and other collaborators.

Fifteen years of monitoring Cedar Creek by TRWD confirmed increasing levels of chlorophyll-*a*. An indicator of algae growth, chlorophyll-*a* is accelerated by excessive nutrients flowing into the reservoir from the surrounding watershed.

Because of those findings, in 2004 Texas A&M University's Spatial Sciences Laboratory began modeling the upland, in-stream, and in-reservoir processes that led to the chlorophyll-*a* increases. The computer models indicate that excessive deposits of the nutrients phosphorus and nitrogen are transported via direct runoff and sediment transport from a combination of urban and rural sources. Researchers point to agricultural practices, wastewater treatment plant discharges, and urban stormwater runoff as contributing factors.

If chlorophyll-*a* levels escalate at the current rate, TRWD officials said the reservoir may appear on the U.S. Environmental Protection Agency's (EPA) listing of impaired water bodies as outlined in section 303(d) of the Clean Water Act. Such a designation could likely result in regulatory measures by the Texas Commission on Environmental Quality.

TRWD officials hope to avoid mandatory regulation by engaging in stakeholder-based watershed protection planning focused on holistic solutions to water pollution by examining the impacts of upstream activities.

Watershed-based planning is a relatively new approach to pollution reduction in all sizes of water bodies. The process evaluates the relationship of water quality to land use, soils, hydrology, and climate within a single geographic area.

Photo courtesy of Tarrant Regional Water District

"Watershed protection planning is based on the management of activities that take place within the landscape that drains into a specific body of water," said Clint Wolfe, grant and project coordinator with Texas AgriLife Research and Extension Urban Solutions Center at Dallas and manager of the project. "By incorporating water quality testing and computer modeling, we are able to assess the condition of Cedar Creek Reservoir and its tributary streams to develop a specific plan of action to address the excessive pollutants."

Stakeholder involvement began in July 2007 with a series of public meetings targeting urban and agricultural interests in which the issues facing Cedar Creek Reservoir were presented. A steering committee comprised of people attending these meetings will work with project staff on the viability of proposed strategies for pollution reduction.

Darrel Andrews, TRWD's environmental services assistant director, said this format will offer stakeholders a unique opportunity to prevent regulatory involvement.

"This is a proactive approach," Andrews said. "Let's get everybody involved before it (pollutant loads) gets to the level that draws somebody in who is going to make us do it."

Stakeholders are discussing a series of best management practices such as grassed waterways, filter strips, rainwater harvesting, stream bank stabilization, and educational programs to prevent urban and agricultural nonpoint source pollution.

Project leaders plan to have the Cedar Creek Watershed Protection Plan finalized by the summer of 2008.

"We are striving to create a program that will be duplicated in other watersheds," Wolfe said.

Also under way is preliminary modeling of Eagle Mountain Reservoir, located northwest of Fort Worth and managed by TRWD. Similar ⇨

Water quality works to improve reservoir

stakeholder-based watershed protection planning efforts will begin in early 2008. Project members plan to complete watershed planning for Richland-Chambers Reservoir within the next two years.

In addition to water quality modeling and stakeholder activities, Texas AgriLife Extension Service is conducting an extensive nonpoint source pollution educational campaign. Leading the project is Dr. Bruce Lesikar, AgriLife Extension specialist and agricultural engineer.

The goal of educational outreach is to increase citizens' water literacy while working to improve the quality of water in the Cedar Creek watershed. AgriLife Extension has held workshops on watershed management, stream restoration practices, agricultural best management practices, rainwater harvesting, nonpoint source pollution control, on-site septic system maintenance, and other water quality issues facing urban and rural stakeholders.

AgriLife Extension with help from local county Extension agents in Rockwall, Kaufman, Van Zandt and Henderson counties has conducted more than 30 programs and reached more than 6,000 individuals.

The project is a collaborative effort of TRWD, Texas Water Resources Institute, AgriLife center at Dallas, AgriLife Extension, Espey Consultants Inc., and Alan Plummer and Associates Inc. It is funded by EPA, U.S. Department of Agriculture's Natural Resources Conservation Service, and TRWD.

Congressional funding for this project was obtained through the leadership of Rep. Kay Granger of Fort Worth.

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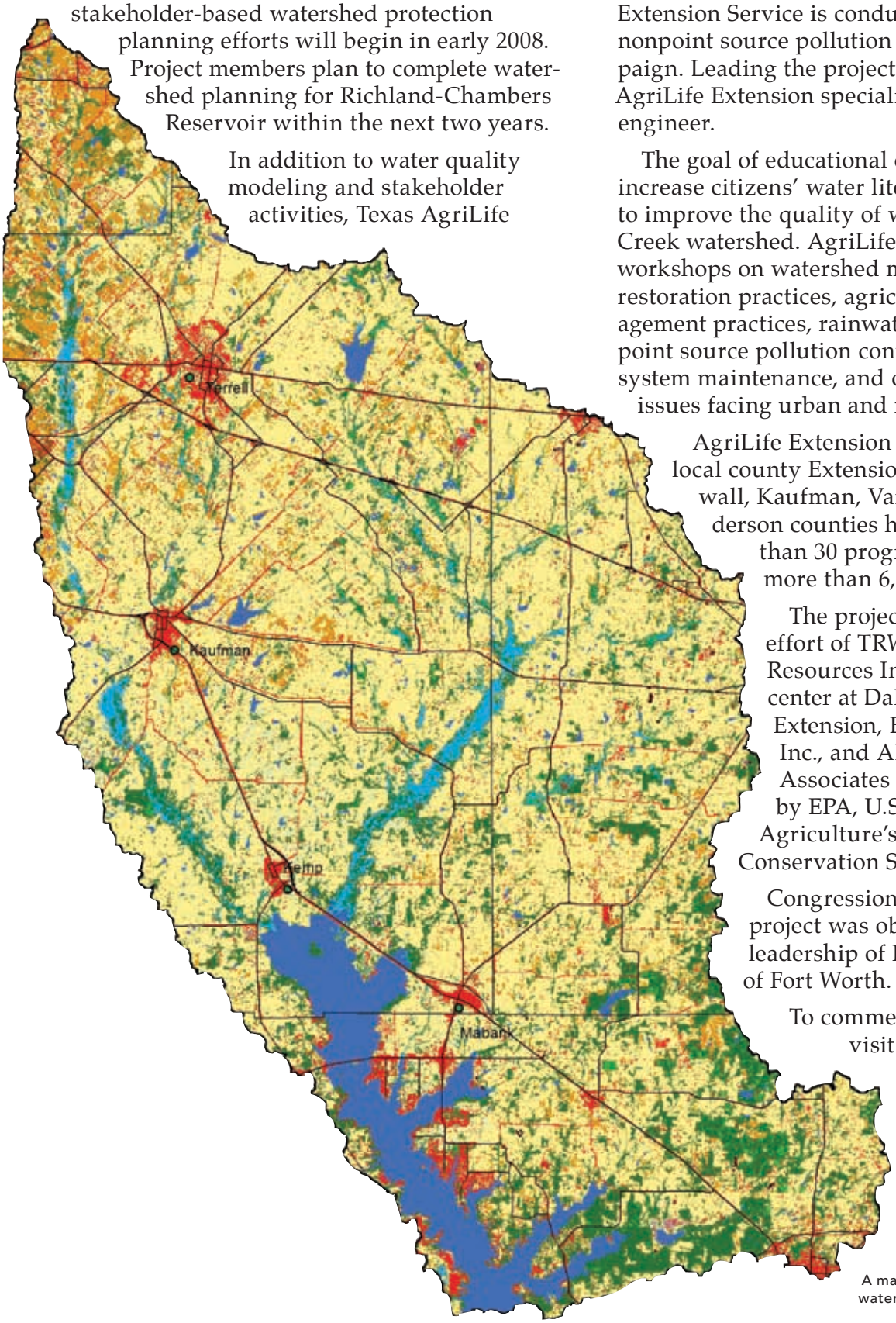
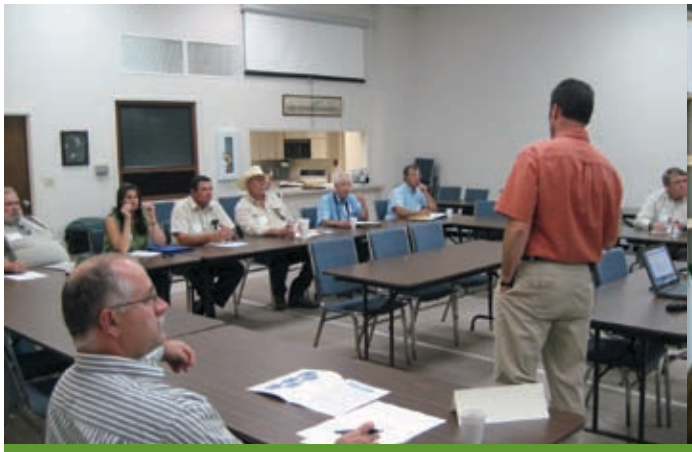
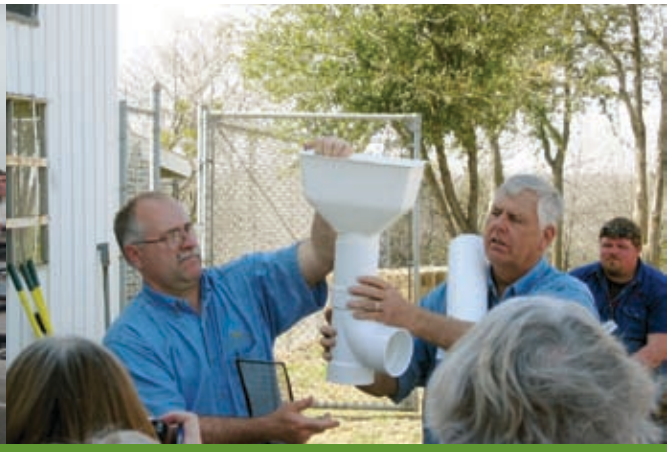


A map of the Cedar Creek watersheds.



Darrel Andrews, Tarrant Regional Water District environmental services assistant director, talks with stakeholders during an agricultural workgroup meeting for the Cedar Creek watershed protection plan.



Dr. Bruce Lesikar, AgriLife Extension specialist, demonstrates the instillation of a rainwater harvesting system as a means to decrease stormwater run-off from home landscapes.

Bob Pritchett, Tarrant Regional Water District environmental technician, takes a stream survey at Cedar Creek Reservoir. (Photo courtesy of Tarrant Regional Water District)

Dr. Dotty Woodson, AgriLife Extension specialist at the Urban Solutions Center in Dallas, demonstrates the instillation of drip irrigation during an educational program in the Cedar Creek watershed.

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